

ABSTRACT

An electromagnetic wave generator encompasses a first pump beam
5 emitter (2) configured to emit a first pump beam ($h\nu_1$) having a wavelength
larger than one micrometer; a second pump beam emitter (25) configured to
emit a wavelength-tunable second pump beam ($h\nu_2$) having a wavelength
larger than one micrometer, the wavelength of which is different from the
wavelength of the first pump beam ($h\nu_1$); a nonlinear optical crystal (19)
10 configured to generate an electromagnetic wave ($h\nu_3$) of a difference
frequency between the first pump beam ($h\nu_1$) and second pump beam ($h\nu_2$);
and an optical system (M_1 , M_2 , 18) configured to irradiate the first pump
beam ($h\nu_1$) and second pump beam ($h\nu_2$) to the nonlinear optical crystal (19),
by adjusting an external intersection angle between the first pump beam
15 ($h\nu_1$) and second pump beam ($h\nu_2$) within 0.5° at the difference frequency
of 1 THz. Here, a frequency-tunable terahertz electromagnetic wave ($h\nu_3$) is
generated in the nonlinear optical crystal (19), by changing the frequency of
the second pump beam ($h\nu_2$), being liked with the change of the external
intersection angle.

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